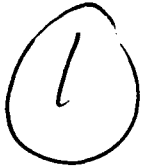


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Paradigm Shift

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Paradigm Shift: Can TQM Save DOD's Procurement Process?

Ross V. Romeo

University Of Maryland, University College

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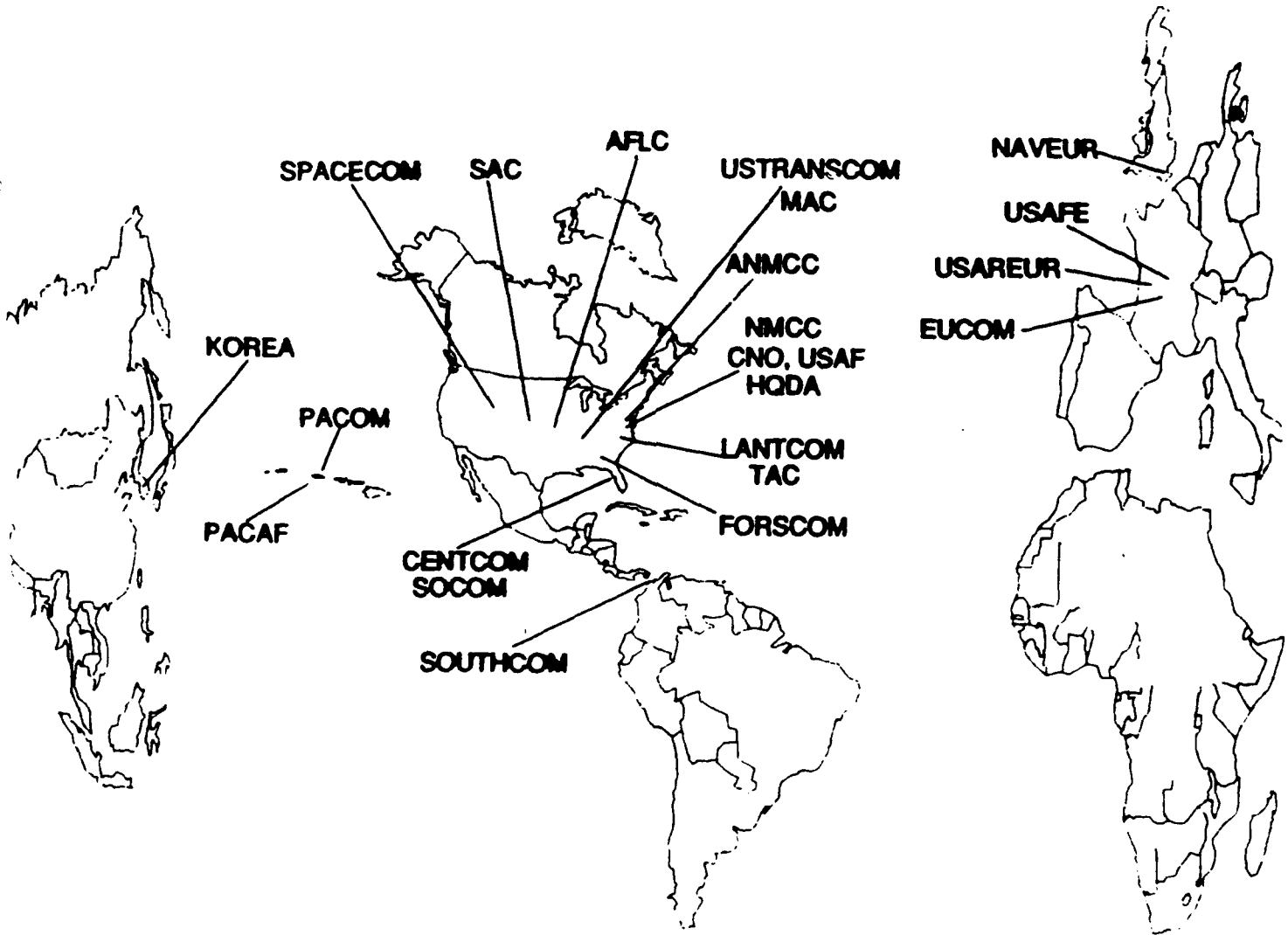
Abstract

The Department of Defense's (DOD) ambitious introduction of total quality management (TQM) will fail, unless they change their paradigm and reengineer how they do business. TQM implementation in the defense department and possibilities for reengineering DOD's management structure were investigated. This paper uses a case study to investigate DOD's procurement efficiency and effectiveness with information technology. The findings show DOD is faced with its greatest challenge since WWII in meeting the rapidly evolving environment of the 1990s and the 21st century.

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FIGURE 1

WWMCCS Intercomputer Network (WIN) Main Computer Sites



War. 2 August 1992, Iraqi T-64 and T-72 tanks rumble south into Kuwait. By midmorning, Kuwait City, the capital, succumbs to the onslaught and falls into enemy hands. Ten thousand miles away, an interservice computerized giant stirs as automated messages flow through its communications lines to all the worldwide U.S. commands. Conceived after the Cuban missile crisis and set up in the mid seventies, the global Worldwide Military Command and Control System (WWMCCS) Intercomputer Network (WIN) was crucial during the Persian Gulf War. Without WIN, (Figure 1) America could not have swiftly moved the troops and material from throughout the world to Southwest Asia. (Romeo, R. V. 1992).

It was not planned this way. Another global message system called the Automatic Data Information System (AUTODIN) was supposed to process the significant logistical traffic for the Pentagon. Within 24 hours of the start of the air war, AUTODIN was saturated and overwhelmed with traffic. The Pentagon's Joint Staff called upon WIN to fill the communications void. Its performance was exceptional by providing 99 percent reliability during the war. By the end of 1991, network changes to this TOP SECRET network began to overwhelm the Pentagon's ability to monitor the main computer hosts. From the 30 main WIN sites, the network supports over 100 government locations and more than 100,000 users.

The technology and equipment used by the Pentagon to monitor the WIN dates from the 1970s. It cannot keep pace with the 1990s network changes. Pentagon management went to its primary contractor for the WIN, Bolt, Beranek and Newman (BBN) in Boston, MA, for assistance in updating its network monitoring equipment. By mid 1991, procurement began for a new generation of network monitoring equipment for the WIN called Viewnet.

This is a case study of the Pentagon's procurement process for information technology. It examines the Department of Defense's (DOD) internal environment consisting of the organizational structure and its impact on strategic funds programming. It shows management's efforts to overcome the procurement hurdles for information technology in the 1990s. The case study questions whether DOD's ambitious introduction of TQM is working without first reengineering how DOD does business. Previous DOD procurement has received front page headlines with stories of excessive cost overruns. The problems in this area of DOD are depicted with stories of \$600 toilet seats and \$200 hammers.

Information technology spending is big business to the defense department. As part of that budget, the military and defense agencies invested \$6.3 billion in science and technology in 1992. Private industry investments in this area were approximately \$7 billion. (Williams R. H. 1992).

BBN is a large information services contractor to the DOD. This company receives approximately \$30 million a year for network services. Yet, management of DOD's networks in 1992 is similar to how it was done in 1972. The operations and procurement for new information technology is often separate for each network. In addition, each service (Army, Navy, Marine, Air Force) routinely manage and procure their information technology independently. There are over 20 different networks supporting the Pentagon. The management and procurement of these "stovepipe" networks usually do not overlap. Duplication of effort is the norm and wasted resources are the results. The efforts to get new information technology through BBN for the WIN portrays a seriously flawed process within the DOD. (Marsan, C. D., Brewin, B., Herman, E. 1992) Billions of dollars are at stake, yet there is a waste of millions of dollars each year.

DOD must correct this problem soon, because the 1990s will be a decade unlike any other since the arrival of the industrial revolution. The new age of information technology is emerging. Managers must prepare to abandon everything they know. Just as steam power, railroads, the automobile, electricity and the airplane shaped and defined the industrial revolution, organizations must be ready to adapt to the information technology revolution now truly beginning in this decade. Those who fail to adapt and recognize this change in how things should be done, or paradigm shift, will be bypassed.

In 1989, DOD's leaders recognized the paradigm shift. With the guidance of The Secretary of Defense, Dick Cheney, they directed a sweeping reform in a Defense Management Report (DMR). It called for improved efficiency through better business practices. Under a new program called Corporate Information Management (CIM), DOD is seeking to improve its procurement of information technology. Yet, three years after the DMR decree by the Secretary of Defense, the Defense Department is groping with this new paradigm. Upper level management has a new strategic vision. It is seeking to set up this vision with the business practice called Total Quality Management (TQM). With TQM, DOD is attempting to change how it does business. It is ironic that emerging information technology is creating the need to fix how the Pentagon obtains this asset.

To carry out its plan, DOD must discard its internal structure of a top-down pyramid shaped hierarchy of multiple layers. Challenging DOD's internal environment is the external paradigm shift. There is a pull seeking change simultaneous with a technology push resulting from the new paradigm in the technology itself. (Staff, 1992).

DMR's strategic procurement vision needs centralization to be successful. But, after three years, the DMR and its impact is still not well understood by most people in the defense department (Jones, L.R. 1992). The vision of where the organization is headed lacks a sense of purpose, long term direction and an overall mission (Thompson, A., Strickland A. 1992).

Adding to the misunderstanding is the glut of literature talking about TQM, and how DOD must reengineer its information technology procurement process. Are these two terms just management buzzwords? There is a difference between the two. Yet, they often become a combined solution creating confusion as organizations undertake a strategic shift in their internal operating philosophy and vision. (Diamond, S. 1992). TQM seeks to enhance how DOD does business with its customers and suppliers. TQM calls for incremental improvement over many years. Those changes are usually small and occur within the organization. The paradigm shift occurring in the 1990s demands more. DOD cannot successfully create change by solely using TQM. Top DOD management must first understand the necessity to reengineer the entire procurement structure (Diamond, S. 1992) before introducing TQM. TQM can then be introduced into the new reengineered procurement structure as a process to enhance business practices.

The DMR's vision and CIM plan are not yet successful. The Viewnet case study shows how information technology procurement is derived from 30 year old policies and procedures. Viewnet is not fielded. It is behind schedule, and BBN is asking DOD for 200-500% more money to deliver a complete system. The Pentagon operates under an outdated procurement structure last overhauled in the early 1960s. Adding to the problem is the process is often highly politicized. It fails to be effective, because of antiquated structural flaws in the budgetary process. In many ways, DOD's budgetary and accounting systems can be traced back to the 1920s. It was at this time Alfred Sloan at General Motors refined the hierarchic management structure still in use by DOD today. (Nolan Norton Institute, 1988).

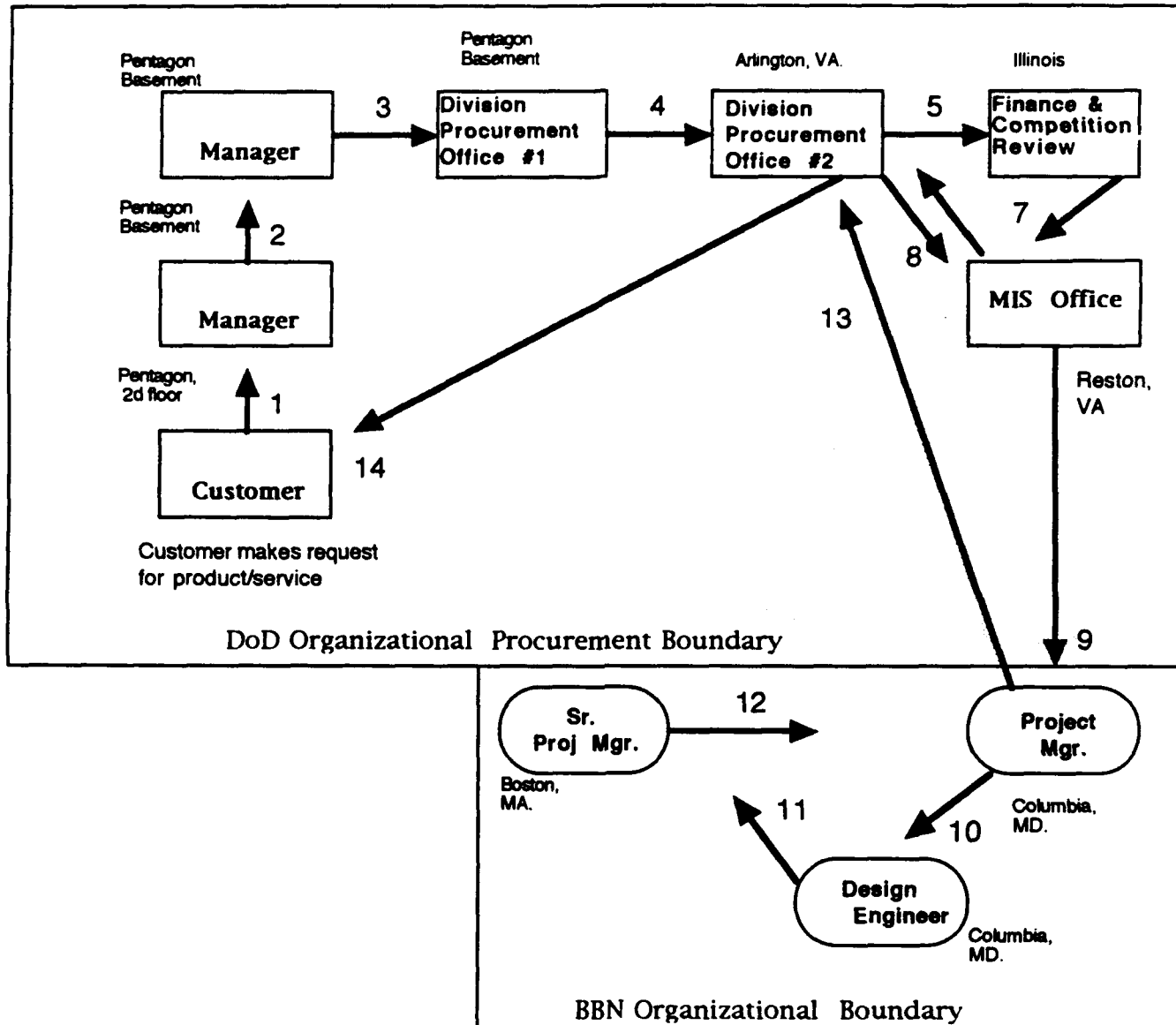
Secretary of Defense Robert McNamara refined the procurement process in the early 1960s with his introduction of the five year Planning, Programming and Budgeting system (PPBS). Thirty and seventy year old procurement structures are failing in the 1990s. It wastes enormous amounts of resources. In 1992, DOD terminated a major weapons system for budget reasons. They invested over \$600 million in the program and the Pentagon received nothing. (Conver, S. K. 1992).

TQM can be compared to the latest version of Microsoft's Windows software program. Attempting to run Windows on a late 70's Osborne computer will not work. The hardware's internal structure requires upgrading to run the system. BBNs proposal for additional money is due mostly to a faulty procurement structure. Examination of Viewnet's procurement process (Figure 2) shows why the structure needs upgrading before converting to a TQM operating system.

Typical DOD information technology procurement excludes the customer. The customer must be included at every phase of the systems analysis and design phase. (Figure 3). Just before the Viewnet acceptance testing, the customer was brought back into the process to evaluate the product. It was too late.

FIGURE 2**Viewnet Procurement Process/Paperwork Trail**

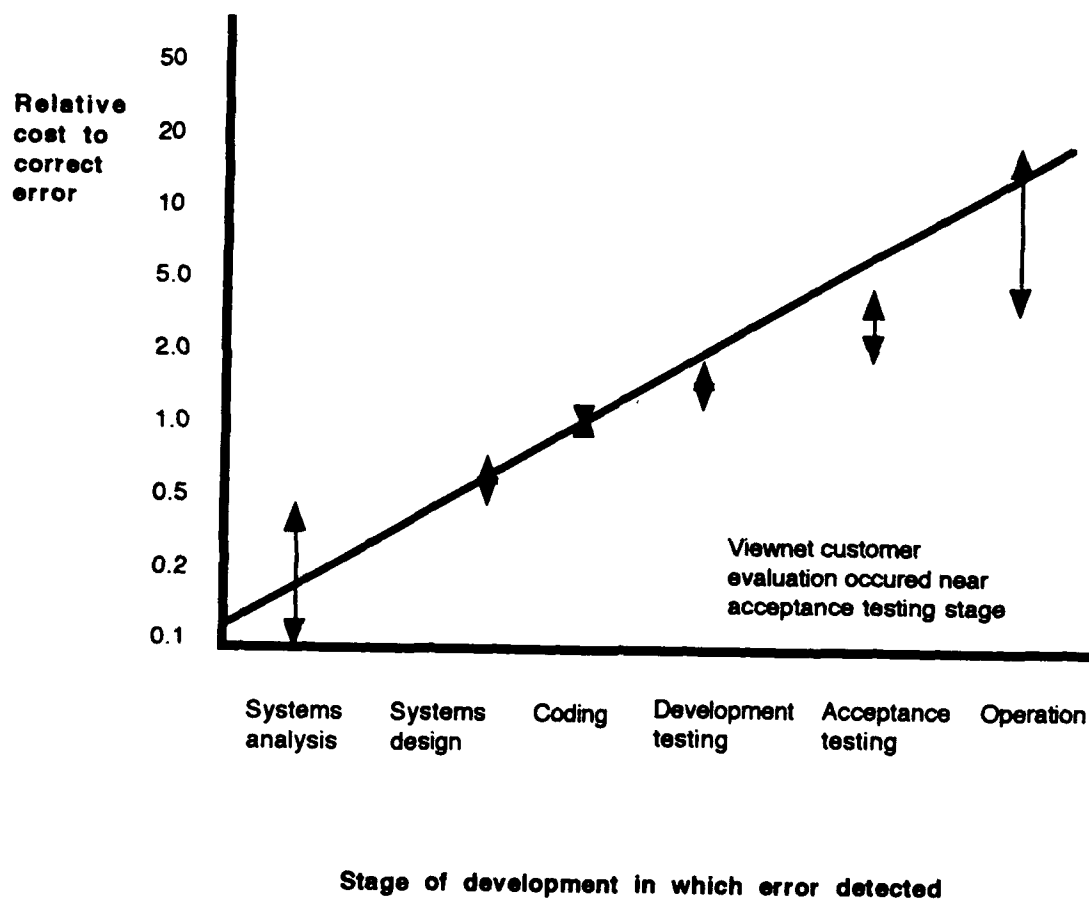
Department of Defense and BBN



Nine steps were required before the Viewnet contract was awarded to the BBN supplier. Money had to be allocated from two different divisions that wanted Viewnet. The finance office located in another state (Illinois) reviewed the work and competed the contract as required. The MIS office reviewed the engineering specifications and system implementation. From there, it went back to Division #2 which was acting as the primary project office between the two divisions. Final changes were made and then the awarded contract was sent back bypassing the MIS office to the supplier BBN. At a minimum, three offices were involved within BBN before the final product was ready for delivery. Upon completion of step 14, the customer, was asked to review the product. Note: exact office titles were not used.

FIGURE 3**Relative Costs of Correcting Systems/analysis Errors**

From *Management Information Systems, The Managers View*, by R. Schultheis, M. Sumner, 1992, p. 685.



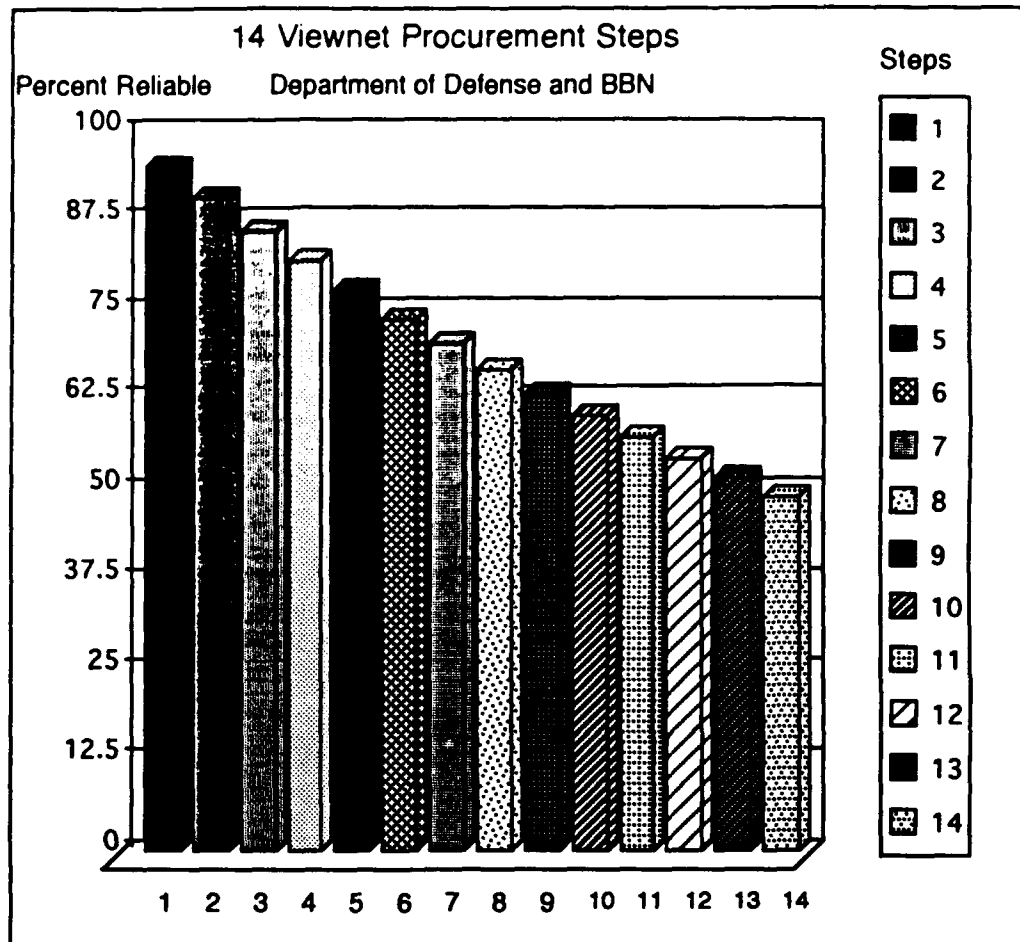
Yet, BBN did deliver a technically accurate system. Unfortunately, they designed it for the wrong DOD network. A problem in systems development is many systems are technically accurate and do work, but they do not meet the requesting customer's needs. (Schultheis, 1992). This is because under the current DOD procurement structure, customers often don't know the status of their request. Only people with the *green visors* in budgeting and procurement seem to know this information. With today's information technology, this is unnecessary. The customer/requester of a product is the best source of quality control in DOD. Yet, the procurement decision making process ignores the customer after the request leaves the office until the product arrives at the doorstep. This *doorstep procurement* stems from the multi-layered procurement structure within DOD. BBN attempted to give DOD a system incapable of doing its primary mission. It could not track the 30 main hosts operating in the WIN. It was like buying a car from a dealer. After the paperwork is finished, the dealer attempts to deliver a blender. Although there was nothing wrong with the blender, it was unable to provide its primary purpose of providing transportation.

Reengineering this hierarchy and removing the barriers between the supplier, buyer and the customer greatly improves the process. Lack of customer involvement almost guarantees failure, because it will not meet requirements. Customer involvement is crucial during the systems analysis and systems design. (Schultheis, Sumner, 1992). Continuous feedback during procurement increases the likelihood of a operationally correct product.

Feedback did occur within the 14 steps. In one instance at step 10, a BBN systems analyst visited the customer's job site at the Pentagon. Unfortunately, the BBN systems analyst lost this critical feedback. The project then went forward through steps 11 and 12 without the customers input producing the noncompatible system.

The Viewnet procurement process is a microcosm of the general DOD procurement structure. It is a complex and lengthy process requiring continuous feedback from all participants to ensure things go according to plan. Like Viewnet, there are too many working parts decreasing the system's total reliability. Figure 4 mathematically illustrates how the multiple layers in the Viewnet procurement causes a technically unworkable system. A way of looking at this process is to view each office's involvement in the process as 95% efficient. Most organizations or managers accept this high efficiency rating. But, when each office becomes part of a system, the individual 95% efficiencies are cumulative. In the Viewnet case study, when the product returned to the customer for acceptance, it had an approximate 50% chance of meeting the intended customers request under the current procurement process.

With its multiple vertical and horizontal layers, DOD's procurement structure excludes two important participants. If there is a procurement team, the customer is still in the locker room and the supplier does not have any tickets to the game. Successful product delivery to the customer requires open communications from the bottom to the top of an organization. Procurement is a team effort and includes the customer and the supplier. (Richards, J.D. 1992). This did not occur with Viewnet.

FIGURE 4**Office/System Reliability Without Feedback**

The Viewnet procurement had less than a 50% chance of being what the customer wanted by time of installation. As each step progressed in the Viewnet procurement process, unreliability was added. Each office was rated as if their actions were 95% accurate. The overall reliability accumulates unless feedback is received from the initiator of the action, i.e. the customer. During the 14 steps of the Viewnet procurement process, no successful feedback was given or obtained from the customer until the system was almost ready for installation. Successful feedback to the customer would have increased the procurement's reliability process. Reliability formula = $(0.95)^{14}$

The Viewnet paperwork traveled through a minimum of 10 individuals located in 10 different offices operating in 4 different states. The paperwork traveled not only vertically up the organization, but it also went horizontally through the structure on its interstate procurement process. Viewnet at step 14 was different from the Viewnet at step 1. The product was so altered, it was unusable. This also happens frequently in the defense department.

The DMR resulted from the repeated information technology procurement failures of DOD. The Defense Department frequently cannot buy products on time and within cost. The battle cry of TQM uttered by many TQM coordinators and beltway consultants is without realizing the new paradigm. They do not understand the need to first reengineer the internal structure. Even without the reengineering, DOD is incorrectly practicing TQM. DOD's leaders are caught within an outdated paradigm. The leaders are establishing TQM and creating the teams. W. Edwards Deming says management should provide the vision for team creation. It should be the workers who form the teams to solve the problems identified at their level.

During the Viewnet procurement, DOD and BBN workers identified a disconnect between the customer's request and the developing product. Yet, they took the problem to higher management for resolution. The workers did not have the power to make decisions to fix problems.

This is an important point. DOD must also include the suppliers into the effort. The boundaries separating the internal and external environments must change. The biggest challenge is getting the right organizations to work together and blow away the artificial boundaries separating them. (Staff, 1992).

DOD procurement must reshape its boundary encompassing its contractors (suppliers) for TQM to succeed completely. Currently, DOD mandates TQM will be set up. DOD sends legions of workers for *Introduction to TQM* courses and follow-on seminars. The internal organizational structure remains unaltered. TQM cannot be mandated like zero base budgeting or quarterly fire drills. TQM is a way of life and a cultural in change how the workers run the business within management's vision. (Mizaur, 1992). The challenge to the Pentagon's leadership is to reengineer the procurement structure creating teams including the customer and supplier. (Richards, J.D. 1992). Under the current DOD procurement structure, the product or service is not always the main focus. Conflicting issues and regulations dilute the effort. The system fails to deliver an effective or efficient product.

Components work together to support each other in a well organized system. Everybody wins. "If...the components become competitive, the system is destroyed. Everybody loses. Costs go up, quality declines...unfortunately, this fate awaits the Western world because of the prevailing system of management, which does not understand a system". (Deming, W. E. 1990).

The DOD procurement system is not well understood by its own workers and even some of its leaders. It no longer can function as the traditional system with only downward authority. It must be changed to accept multidimensional communications throughout the organization. (Deming, P. 1977) Emerging technology such as electronic and voice mail in the 1990s increases opportunities for participants at all levels to communicate with one another. In many private corporations, it is not uncommon for workers to send E-Mail to the CEO and bypass the telephone and office gatekeepers.

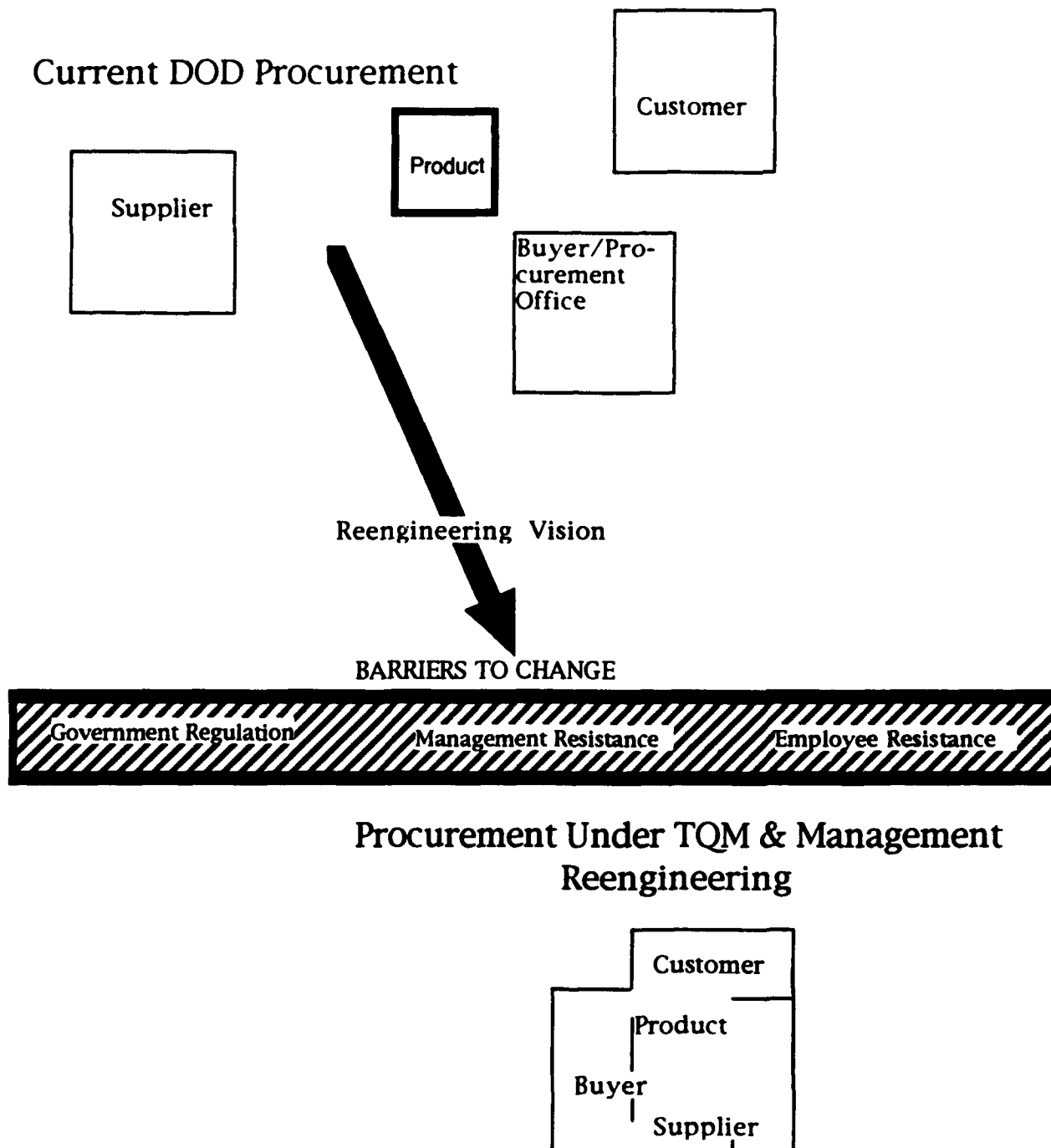
Policies and regulations within DOD are major barriers blocking the way for procurement reengineering. The "T" in TQM means "TOTAL". TQM says to embrace not only your customers but your suppliers. DOD regulations forbid this. Top management, Mr. Stephan Conver, Assistant Secretary of the Army for Research, Development and Acquisition, says suppliers must not become part of the procurement team. "We have found that it is not necessary to have an adversarial relationship with our contractors, although we certainly recognize the need to maintain an arm's-length relationship in contractual matters."

Dr. Deming disagrees. He says you cannot maintain the old attitude of maintaining an arm's length relationship with suppliers or contractors. Conver operates under an existing procurement structure with a management style known as keeping them in the dark like mushrooms and only feeding them manure. (Aguayo, R. 1991).

DOD's leaders must change their internal structural vision in order to use TQM (Figure 5). The barriers must be removed between the customer, supplier, and buyer. Systematically keeping the supplier at an arm's distance serves as a catalyst for product inferiority. The recent success of General Motor's Saturn division depicts how quality dramatically improves when the team includes the supplier.

If DOD's leaders are sincere in their efforts to implement TQM, then they should consider the Deming flowchart (Figure 6). Saturn's management, like their Japanese counterparts, found and worked with the best suppliers available. Price entered the discussion after the product met stringent quality specifications.

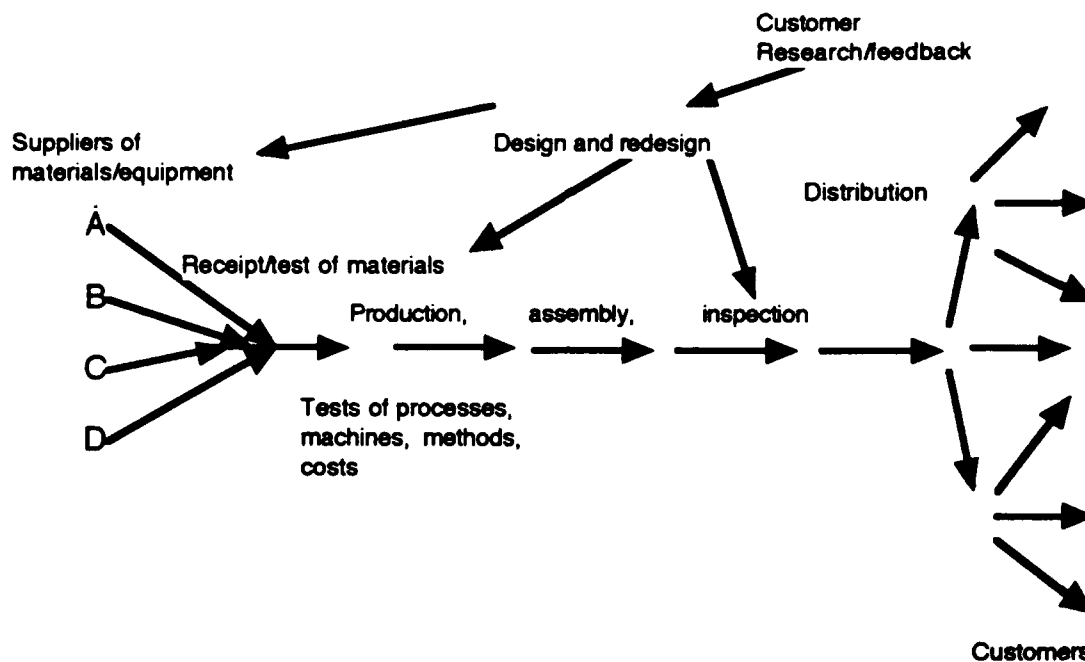
FIGURE 5 Interaction Among Key Procurement Players



Reengineering the organizational structure and introducing a TQM operating system eliminates most of the internal barriers. Teamwork and mutual cooperation are integrated into the reengineered procurement process. The product either tangible or intangible becomes the central focus of the team. However, this new process cannot occur unless the current barriers of change, government regulation, management and employee resistance are overcome.

FIGURE 6 1950 Deming Flow Diagram

From *Dr. Deming, The American Who Taught the Japanese About Quality*,
by R. Aguayo, p. 120. Copyright 1990.



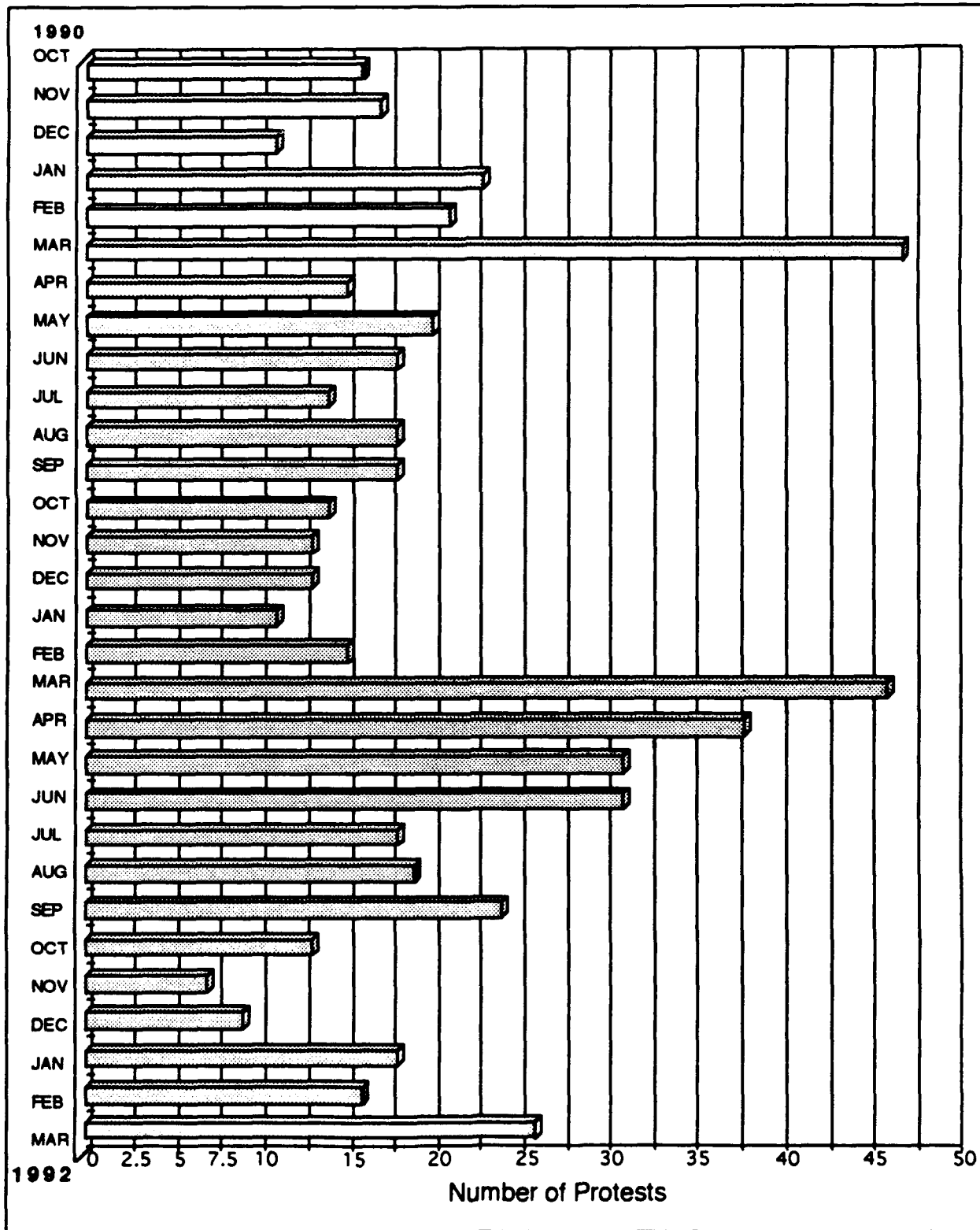
Dr. Deming first displayed this flowchart to his Japanese top management students in 1950. There are no barriers. There is no separation between the customer, supplier, management and the people. The artificial legal barriers are reduced. This unifies the process. Suppliers are no longer chosen just on lowest cost. The first consideration is being a harmonious team member producing the highest qualitative results. (Aguayo, R. 1991).

Keeping contractors or suppliers at an arm's length creates mistrust. Deming says the correct way of dealing with suppliers is to treat them the same way you treat a customer; with respect. DOD procurement procedures are rife with conflict. It mistrusts suppliers. " ... ADP vendors...many times (are) thought of by the government procurement community as 'greedy,' 'sharks' and little better than 'pond scum.' (Connelly, J. 1992). This is a lousy way for procurement officials and management to do business. The GSA ADP protests filed (Figure 7) graphically depicts this problem as suppliers slug it out against DOD and each other. Practically every major system awarded by DOD receives a protest. This adds enormous costs. It significantly delays implementation as DOD sorts through each protest and then *rewards* a contract.

The reengineered answer is for DOD to develop loyal long-term relationships with suppliers. They should be given every opportunity to see the total picture with the necessary assistance and information they need. DOD procurement management needs to work smarter and not harder with suppliers. Current procurement policies and management oversight wrongly concentrates on doing things right than doing the right things. (Aguayo, R. 1991).

FIGURE 7**GSA ADP Protests Filed by Month**

From *Federal Computer Week*, Staff, 1992 September 21, p. 46



It was not always this way. The WWII procurement miracles resulted from DOD embracing its suppliers. They did not keep them at an arm's length. It is doubtful DOD could have produced the vast new array of aircraft, armada of ships (transport and war fighting) or even the atomic bomb in WWII under today's procurement regulations and policies. The current paradigm prevents DOD and even the federal government from understanding the inefficiency of today's procurement procedures. They believe the many regulations and policies are necessary.

Laws and regulations change. In 1973, the interstate speed limit in most states was 70 mph. In 1974, due to an oil shortage, the United States reduced the speed limit to 55 mph to save oil. DOD's procurement regulations may have made economical sense when they were written, but they are stuck at 55 mph. They waste resources trying to pace today's rapidly changing environment. The information age of the 1990's is not a continuous process, but an actual shift. This shift demands a new business environment to create an open and networked enterprise. It must link customers, suppliers and competitors. It's a variation of Harvard University's Michael Porter's idea of the value chain. The inputs from supply and support groups are added value through production to create an output for the customer. The new paradigm demands the open, borderless and networking business environment. It adds the suppliers and competitors to the value chain creating an extended value network. (Staff, 1992).

What a strange idea, but here is an example how DOD could implement it. In 1992, DOD decided who was going to get the contract to build the Seawolf submarine. Two shipbuilders, Tenneco in Newport News, VA, and General Dynamics in Groton, CT, vied for the position. The winner meant life to the shipyard, while the loser would be forced to close its ship building business. In the reengineered value network, both shipbuilders would be linked into the effort. In this scenario, the best technology from the two companies are combined to produce a sole submarine. Both companies win. DOD receives a higher quality submarine than could be produced by one company. DOD must break their outdated procurement mold before a success story like this will ever occur.

But regulatory barriers haunt the Pentagon's ability to create the necessary changes to the procurement structure and process. "Ignoring the advice of the Pentagon, the Federal Trade Commission (FTC) blocked a merger between the two remaining suppliers of Army tank ammunition." (Pearlstein, S., 1992). There is only enough business to support one supplier. Yet, the FTC wants the Pentagon to pit the two remaining suppliers against each other in an ultimate and final competition: life to the winner and death to the loser. Merger between Olin Corporation's ordnance in St. Petersburg, Florida and Alliant Techsystems Inc. of Minnesota is outside the FTC's paradigm.

The Defense Department acquires systems, subsystems, equipment, supplies and services on a competitive basis. This seems to be a reasonable requirement. But it becomes a springboard to inefficiency. James Blackwell of the Center for Strategic and International Studies says "America's antiquated antitrust enforcement system may well prevent a national market-driven transition in the defense industry while sticking the taxpayers with a huge bill for maintaining an inefficient defense industrial base." (Pearlstein, S., 1992). Blackwell backs his claim with studies done by the Pentagon's Inspector General (IG). The IG found that forcing suppliers to split the business in the name of *fair* competition actually results in higher costs to the government.

The system is out of control. The Pentagon know this, but their hands are tied by federal bureaucrats operating with antiquated doctrine. DOD's procurement regulations cause poor quality, waste and exorbitant costs. (Aguayo, R. 1991). The regulations encourage multiple sources for a single product. They are specific by stating multiple sources must be considered first over a sole source regardless if the sole source provides the highest qualitative product. Imagine buying a car with wheels made by Chrysler, the engine by Honda, and the transmission by Mercedes!

Blackwell's studies show the federal government may reap a cost savings in addition to higher product quality. In this example, the FTC needs to be at the vanguard of the necessary reengineering by seeking to change the regulatory barriers. They too, need to put their arms down and seek ways to embrace suppliers and the supplier's competitors.

Suppliers providing goods and services to DOD reside outside the DOD's external boundary. Government guidance in the *Cost/Schedule Control Systems Criteria Joint Surveillance Guide* accentuates this conflict between DOD and its contractors. During the life of a contract, DOD spends enormous effort in time, money and personnel with "surveillance reviews". The surveillance review serves as a periodic evaluation ensuring the contractor is doing its work. DOD has established an enormous infrastructure to monitor contractors and suppliers to ensure they don't *get away with* self-serving decisions. These monitoring costs amount to millions of dollars annually. A government watchdog, the General Accounting Office (GAO), says DOD wastes millions of procurement dollars a year. These reports themselves are a primary example of waste, because nothing is done. (Keyes 1992). Under a reengineered procurement structure with a TQM operating system, the monitoring costs are often unnecessary. (Rao, R. K.S. 1992) The procurement process unifies the customer and supplier. If a team produces a poor product, it is returned to the supplier. The customer leads the "fix-it" team until the customer is satisfied. The supplier despite monitoring or, surveillance, automatically bears any costs. The supplier is part of the procurement team. Poor quality and cost overruns are the rare exception instead of the norm.

In the Viewnet case study, the reengineered procurement team would have at a minimum consisted of:

1. Customer
2. Buyer (procurement office)
3. Project Manager
4. BBN (supplier)

Instead, these members worked separately. After the customer identified the requested product and service, BBN almost delivered an incompatible Viewnet.

Paradigms are difficult to change, because of perceptions and beliefs of reality. Galileo's discovery and announcement the sun did not revolve around the earth challenged a governmental and religious paradigm. They rewarded Galileo for this discovery with imprisonment and censure!

Besides the regulatory barrier to DOD procurement reengineering, there is another significant barrier to change. Individuals and their management are not fully embracing TQM. There is a resistance to change at two levels, managerial and worker. Workers resist changes sought by TQM. It is seen as another management buzzword attempting to do more with fewer resources. TQM is a false prophet, because the necessary structural reengineering is not occurring. Workers feel threatened by management's attempt to establish TQM. It creates uncertainty and anxiety, because it is introduced and mandated from the top down. (Schultheis, R., & Sumner, M. 1992). DOD is superimposing it onto the existing structure. Productivity and quality gains will be limited and could decrease.

Mid-level management is often reluctant to accept and establish TQM. They are not sincere in their effort. Like Viewnet, managers must still transverse multiple bureaucratic layers using TQM. Much management resistance is because the DMR centralizes authority to make policy decisions and allocate budget cuts in the Pentagon. (Jones, L.R. 1992). Midlevel management feels top management is stripping their power while simultaneously reducing it with the TQM effort to push decision making down to lower levels. Also, there is too much reliance on "outside experts" as consultants to teach TQM to the workers. These TQM mercenaries in lieu of leaders do not have the intimate contact to understand the complex social arrangements of an organization. They lack the leaders' vision. (Lawrence, P. R. 1987). Their use adds resistance and further increases the barrier to change.

DOD is not reengineering their pyramid hierarchal chain of command. But, the introduction of TQM has begun. The organizational structure greatly reduces and destroys TQM's ability to create change within DOD's procurement environment. The pyramid structure uses power and control to obtain the compliance of the participants. It suppresses the relevant feelings of the individuals within the organization. (Argyris, C. 1965).

TQM is a bottom-up implementation. Management guides the output or the ideas presented to them to improve the procurement process. Management is reluctant to do this, because it creates a feeling of a loss of their direct power over other individuals. They must realize this is part of the paradigm shift caused by the information revolution. Leaders and managers are necessary to guide and direct the TQM team approach. But, they are not needed just to command, but to inspire their members.

However, the relationship must change and be based on knowledge and not just rank or a pay grade, because knowledge knows no boundaries. (Drucker, P. F. 1992). The artificial boundaries currently erected impedes the successful implementation of TQM. DOD must reorganize its procurement structure from its current pyramid command and control mechanistic function to one consisting of colleagues and associates. The modern organization cannot be one of boss and subordinate. It must be organized as a team.

Another problem is if management is reluctant when it sets up TQM, severe problems can result. (Reuter, 1992). Workers must be treated as functional human beings and not as pawns in the hands of management. Attempts to use TQM as a means to do more with less, or to do something faster causes workers to revolt. It creates a feeling of coercion. Workers feel they are being brainwashed into seeing the workplace through management's eyes (Reuter 1992).

Viewnet shows reengineering of the procurement process has not occurred. It could have been 1972 instead of 1992. The archaic structure and methodology are intact, and the system remains out of control. Less than two years ago, the Comptroller General of the General Accounting Office estimated the federal government wastes \$180 billion annually. This was enough money to fund the state budgets of forth-eight out of the fifty states. Even at the Defense Logistics Agency (DLA) the waste of money is enormous. They spent \$250 million building an elaborate computer system to track purchases and maintain a current inventory. According to GAO, after they installed the computer system, DLA purchased over \$3.5 billion in unneeded inventory including a thirty-three year supply of size 12 women's blouses. (Keyes, 1992).

Another cause of the failing procurement system is due to no external cost controls imposed upon the government. There is no competition. (Drucker 1977). The money is surrealistic because it does not directly impact the paychecks of the people involved with procurement. In private industry, wrong or poor procurement systems cause companies to go bankrupt. DOD can't go bankrupt. Often they will chop up some program to cut costs in the name of efficiency. Sending better people to Washington to "fix the procurement" mess is not a solution. Already some of the best people from highly successful corporations are working this problem. But their efforts to introduce procurement reorganization by superimposing TQM on the existing structure is failing.

The third area requiring reengineering is DOD's five or six year management resource system called the Planning, Programming, and Budgeting System (PPBS). There is confusion with the length of the system's cycle. DOD is attempting to use a six year budget cycle, but Congress only recognizes a five year plan. The output of the PPBS is the DOD recommended budget. By only using a budget, it gives DOD a distorted concept or goal for pay. Success is measured by annual increases to the budget. Although, during the past 18 months of the DOD downsizing, it has been altered to *minimizing* the budgetary decrease. On the other hand, private industry gets paid for the true performance results of satisfying the customer. (Drucker 1977).

An organization running on a budget receives pay not for achieving any goals but for the intention of achieving those goals. Management preaches TQM as a means to achieve the virtues of efficiency and cost control. By superimposing TQM on the existing DOD structure, these two virtues become a farce. Doing something with a smaller staff or smaller budget is not positive performance within DOD's structure. Managers do receive *rewards* for failing to spend the budget to the maximum. They get a smaller budget the following year. (Drucker, 1977).

Consider this true scenario. The manager has spent 75% of her budget. She is frantic, because only one month remains until the fiscal year ends. Luckily, she is able to spend the remaining 25% during the last month thus preventing a possible budget reduction the following year. Her motivation is to spend the money, regardless if the purchases are necessary. Although this scenario seems like it occurred within DOD, it is an example Peter Drucker (1977) uses when he studied the business practices of the Soviet Union.

DOD lacks true incentives to save money. If the money is not spent within the current budget (fiscal year, October through September), then managers lose the money. Or if an organization within DOD saves for example, \$1 million out of their \$10 million budget, they lose the money. The next fiscal year the organization is usually penalized with a smaller budget.

There is no motivation to save money or cut costs. Corporations receive rewards for efficiency and effectiveness through the use of retained earnings. Retained earnings are money a firm has left over to use for the next year. It represents money retained over an entire year and can be reinvested into more equipment or material. (Rao, R. K. S., 1992).

Reengineering of the PPBS is necessary. DOD must change their Soviet-style procurement regulations. It must reward organizations for efficiency with a retained earnings account for strategic use in the future. The senseless and frantic spending of money before the eclipse of a budget period must end. This shackle of procurement management must be broken and reengineered. Government agencies have equal fiscal responsibilities with their private counterparts. Yet, DOD operates as if they are far less aware of them. Their vision is misdirected. Its policies, procedures and methods emphasize and reward wrong behavior while penalizing or inhibiting the right behavior. The internal structure is the problem. (Drucker, 1977).

The proposal of creating a net retained earnings account is a radical concept to career DOD employees. In private enterprises, this is a fundamental building block for growth. This financial concept is outside the paradigm of the DOD hierarchy. They do not understand its power. It destroys budget waste and fraud. "The American civil servant, though totally opposed to communism, will understand immediately what a Chinese colleague tells him about bureaucratic intrigues in Beijing. But he would be totally baffled in his own Washington, D. C. if he were to sit in on a discussion of next week's advertising promotions by managers of the local grocery chain." (Drucker, P. F. 1992)

The creation of net retained earnings accounts within DOD "works to the extent in which a company is reinvesting in itself in anticipation of future growth." (Value Line Research, 1992). It creates and promotes fiscal flexibility. It terminates the senseless spending of money at the end of a budget period. "We have to hold government accountable for spending our money... Like greedy guests sponging off their host in a swank restaurant, they are reading off a menu with no prices when they plan new budgets and new programs." (Keyes, A. L. 1992).

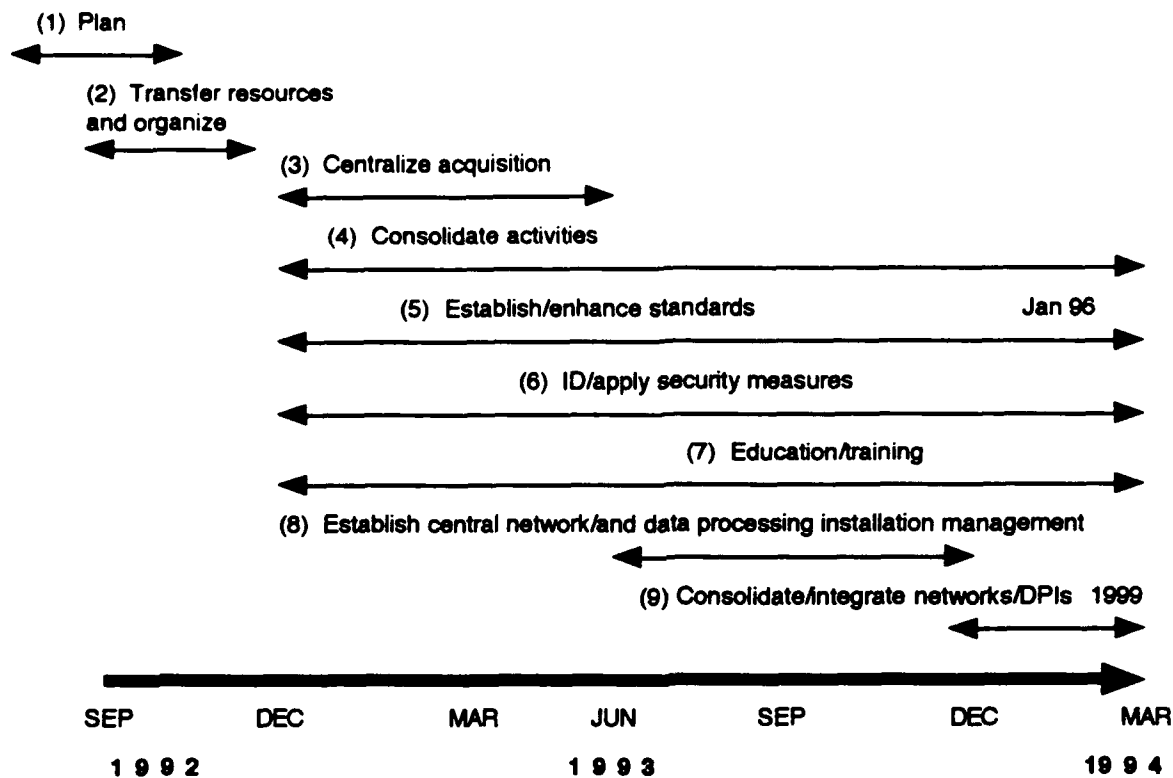
Viewnet shows DOD fails to see all the prices up front. They are given a wad of cash every fiscal year and told to spend it and spend it all. TQM is management's effort attempting to change how business is done. Recently, top DOD management recognized reengineering of its strategic plan is necessary. It is beginning to accept and realize a paradigm shift is occurring.

The establishment of the CIM program is DOD's effort to adapt to the environmental changes of the 1990s. Led by Paul Strassmann, Director of Defense Information, he is different from the majority of top management in DOD. He is not career civil service employee. Strassmann is considered an outsider brought in to fix the Pentagon's procurement and information management problems. He sees the paradigm shift. He is seeking to streamline DOD's information system and slash \$71 billion in costs (Information Week, October 1992).

In addition, the Defense Information Systems Agency (DISA) is establishing their strategic vision for the 1990s and beyond. This agency wants to serve as the systems integrator for DOD. (Brewin, B. 1992). To do this, DISA plans to annex most information management and procurement from the services (Army, Navy, Marine, Air Force) by early 1993 (Figure 6).

FIGURE 8**DISA Grand Strategy**

From DISA to Services: Apocalypse Now by B. Brewin,
November 2, 1992 *Federal Computer Week*, p. 1.



DISA is at the vanguard of creating successful change and business practices for the Defense Department's information technology management. At this time, it is questionable if Strassmann and DISA will succeed. Their reengineering efforts are meeting stiff resistance from entrenched military and civilian bureaucrats. CIM is the realization of the 1989 DMR. Duane Andrews, Assistant Secretary of Defense, backs Strassmann's efforts to reign in an out of control information system by releasing a series of policy documents for the CIM program. These guidelines labeled the 8000 series covers how DOD will operate its future planning and procurement. It emphasizes business process redesign by defining business activities. It seeks elimination of non-value added functions before organizations change or procure new information systems. (Moore, J. 1992).

Strassmann and DISA's efforts are a true reengineering of DOD's procurement and systems management structure. It is a major shift because it integrates information technology management throughout the defense department. It brings annual multi-billion dollar cost savings in an era of diminishing budgets. DOD's 8000 series documents replace the outdated DOD Directive 7920.1 and the 7920.2 Instruction. These two documents directly deal with system life cycle issues. (Moore, J. 1992). These are very positive incremental steps in reengineering the whole internal environment. During the past year, Strassmann could only provide briefs and issue papers regarding his vision of a reengineered structure. The 8000 series documents give him the written blueprints to build the future structure. Coupled with a TQM operating system, DOD's procurement system increases its effectiveness to satisfy the customer while maintaining an efficient bottom line.

This paper provided a comprehensive overview. It specifically concentrated on DOD's information procurement system. It used the Viewnet case study to sample the current procurement process. It discovered the procurement structure remains virtually unaltered after three years of the DMR decree. And finally, it questions whether the TQM implementation will be successful without first reengineering DOD's business process. There probably are numerous examples of where the procurement process has been more successful than Viewnet. However, an examination of the current technical and managerial literature shows the problem exists and is wasting tens of millions of dollars in 1992. The unrealized cost savings through systems integration is far greater.

DOD has faced similar challenges in the past. It has a tradition of accepting the unknown and creating winning solutions. The success of the military stems from its ability to change organizational structures, relationships and responsibilities, (Drucker, P. F. 1992,) and successfully implement a strategic change.

Yet, past performance is not indicative of the future. Management is implementing TQM on a full scale without the necessary structural changes. Strassmann and DISA recognize the paradigm shift. But they are currently battling the bureaucratic opponents for survival of the DISA centralization and CIM programs. If they defeat Strassmann and DISA's reengineering, then the DOD TQM program becomes another of a long list of multi-million dollar failures.

This is an analysis of DOD's procurement organizational structure and how it impacts on their strategic funds programming process. This internal environment is suffering from entropy. The solutions are not clear-cut. For an effective and efficient Defense Department in the 1990s, at a minimum, the following must occur:

1. Recognize the problem: There is a paradigm shift. Information technology is changing the way organizations do business. The specific information technology responsible for the paradigm shift requires a separate paper, and thus was not discussed in great length here. The services' attempts to defeat the proposed changes shows they do not see the paradigm shift. The political battles to save their respective information technology turf is counterproductive. They do not see how the CIM or DISA plans increases effectiveness and efficiency of the whole system.

2. Change the organizational structure and process according to the DISA centralization and CIM plans. This means changing how information procurement business is done in DOD. More specifically:

- A. Integrate and consolidate information management within the Defense Information System Agency. The Defense Department needs to manage and procure information technology with one voice. Separate agency management of information technology is inefficient. It promotes procurement of noncompatible information systems. The current defense department's management of information technology is similar to allowing GM's divisions Chevrolet, Oldsmobile, Pontiac, Cadillac, and Saturn to run independent systems.

B. Dismantle the outdated management command and control pyramid structure for procurement. Senior government employees (GM 14 and GM 15 pay grades) were involved with Viewnet during the first two steps of the process. Yet they possessed no final decision making authority. They could only forward the request to have the paperwork checked, rechecked and over checked in a process called "coordination".

C. Rebuild the management of change into the structure by removing some of the layers of management. Senior DOD employees in the GM 14 and GM 15 pay grades are comparable to a Vice President managerial position in many corporations. Yet, their authority to make daily operational decisions within their own division often must receive approval from higher management one to three levels above them.

D. Create procurement teams with all active participants including suppliers. Customers should be the team leader or project manager. It is the customer who knows best what is the intended product or service. The team leader position should not be defaulted to another office or division because someone is senior or handles the procurement paperwork. A procurement team, is a team of colleagues. Members senior to the actual requesting customer team leader would provide counseling and guidance versus mandating what will be done.

3. Improve the strategic fund programming process. This may be the most difficult of the three necessary changes. It requires the action of lawmakers in Congress. At a minimum, the laws need to be changed to allow DOD to:

A. Embrace suppliers within the TQM business process. Products fail because management keeps suppliers at an arm's length and mistrusts their capabilities. As a member of a procurement team, the failure of the team is also their failure. It an team effort, suppliers bear the costs. They don't get paid unless the customer is satisfied. Being on the same team with the customer ensures they know how to achieve the customer's goals. Enormous savings results from removing the repetitious monitoring and surveillance costs DOD uses to watch contractors and suppliers. An improvement to procurement effectiveness and efficiency also occurs. Technically correct systems for the right problem are fielded.

B. Inefficient products also happen when DOD or federal agencies such as the FTC inhibit suppliers from embracing their competitors. Focus on the customer. Allow competitors to pool their resources. Their synergism results in higher quality and less overall costs to the American taxpayer.

C. Create net retained earnings or budget accounts. Forcing managers to *spend it or lose it* is fiscal suicide in private business. Also, this year end ritual is irresponsible. It is ethically wrong as managers spend the public's money for the sake of just using it. The creation of a net retained budget account allows managers to reduce their annual short term fiscal horizons. The American taxpayer's money is more logically and ethically spent on essential items versus unnecessary stockpiling or partially funded procurements. These accounts also create another incentive lacking in DOD; it rewards managers for efficiency.

If a manager provides equal or better program effectiveness, but is able to reduce costs, then the remaining money should not be needlessly spent just to meet DOD's 30 September fiscal deadline. Efficient organizations are rewarded with the cost savings by being able to carryover the money into the following year. These effective managers would have control where to spend the money within the organization. They would be able to reinvest this money into their organization. This eliminates the current *reward* process of getting a smaller budget the following year for not spending every nickel in the coffer by 30 September. In many ways, this makes DOD organizations run more like a business than a charity. It allows managers to fuel additional organizational and productive growth and rewards them for innovation and efficiency.

Changing the internal environment to meet the external paradigm shift is an enormous challenge. There are many enlightened individuals such as Dennis Groh at the Defense Information Systems Agency. He is creating an online bulletin board procurement system where customers and suppliers can call for the latest information. Groh is doing his best under the structural and fiscal constraints to meet the challenges of the 1990s.

DOD does not have to implement across the board structural change. It can build organizational prototypes or pilot programs to create the new business practices. This allows further fine tuning of this process. There is no checklist for the Defense Department to create change. Using a pilot or prototype program allows management to create change that is incrementally logical. (Quinn, 1980).

If Strassmann and DISA succeed, they will lead DOD into the 1990s and the next century with a revitalized information technology procurement system. The DISA centralization and CIM program are estimated to save DOD \$36 billion in the next four years (Brewin, 1992). The solutions are defined, but the roles within the Defense Department must be redefined. The new role must change from the command model (Abramson M., Scanlon J., 1992) to a improved model of guidance and teamwork. Changing the status quo is extremely difficult. Paradigm shifts in the past have decimated organizational effectiveness if they fail to change to meet this challenge. Is it DOD's turn?

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